

Tracing Research Trends of Artificial Intelligence in EFL Context: A Bibliometric Analysis

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ABSTRACT

Artificial intelligence (AI) has increasingly transformed English as a Foreign Language (EFL), offering new possibilities for language teaching and learning. This study aims to examine research trends in artificial intelligence within the EFL context through a bibliometric approach. The study focuses on identifying the most productive countries, authors, publishers, and the frequency of publications in this field. Data were collected from the Scopus database and analyzed using a quantitative method with the support of VOSviewer. The findings reveal a significant increase in the number of publications over the past five years, indicating growing research interest in the integration of artificial intelligence in language learning. The study also identified China as the most productive contributing country, while Wang, Y. emerged as a key contributor to the development of this research field. In addition, the European Journal of Education was identified as one of the major platforms for publishing studies related to artificial intelligence in the EFL context. Furthermore, the co-occurrence analysis of keywords shows that current research primarily focuses on writing-related applications, pedagogical integration, and technological development. Frequently occurring keywords such as ChatGPT, writing, and chatbot suggest that AI-assisted tools are widely utilized to support language learning, particularly in improving students' writing skills. This study provides important implications for researchers, educators, and practitioners by highlighting current research trends and the potential of artificial intelligence to support more effective and personalized language learning. Moreover, this study contributes to the existing literature by providing a comprehensive bibliometric overview of AI research in the EFL context.

Keywords: *Artificial Intelligence, EFL, Bibliometric*

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INTRODUCTION

Artificial intelligence (AI) has become widely integrated into various sectors of human life, demonstrating its transformative potential across multiple sectors. According to (Demeh & Zaid, 2025), AI is used in humanitarian logistics to replicate human intelligence and enhance operational capabilities, thereby increasing response speed, efficiency and flexibility while minimising damage. From an economic perspective, (Molero et al., 2025) emphasise that AI contributes to structural change in the tax system by detecting fraud, reducing human error, and enhancing analytical processes. In healthcare, (Jassim et al., 2025) report that AI-based diagnoses for breast cancer perform comparably to radiologists and can significantly reduce the workflow when used as a second opinion or triage tool. Similarly, in the field of infrastructure and facility management, (Masud et al., 2024) highlight that AI improves maintenance practices through detailed fault diagnostics and timely interventions, ultimately leading to lower operating costs and preventing critical failures.

This comprehensive integration of AI has also extended to the education sector, particularly language instruction. AI has reshaped the learning process by enhancing learning environments, providing adaptive feedback, enabling interactive tools, and supporting personalised learning to improve student learning outcomes. (Chaudry & Kazim, 2021) found that AI influences not only what learners learn through recommendations, but also how they learn, including the effectiveness of pedagogical approaches and the ability to

maintain learner engagement. In the context of English as a Foreign Language (EFL), AI has emerged as a crucial tool that helps overcome language barriers and provides personalized support, functioning both as a technological tool and as a teaching method (Zhang & Umeanowai, 2024).

As the integration of artificial intelligence in education field continues to expand, increasing research attention has been directed toward examining its pedagogical impact on both teachers and learners. Recent studies have explored the role of AI in enhancing language learning outcomes, supporting instructional practices, and shaping learners' cognitive and affective development. This growing body of research reflects the increasing significance of artificial intelligence as an innovative approach in education context. For example, the research conducted by (Zou et al., 2023) found that an AI-based language assessment program could provide more feedback, offer more instinctive feedback and, provide detailed feedback, relevant practice suggestions, highlight the accuracy of the assessment system, and develop an improvement tracking function to assist EFL learners in developing their skills. In contrast, (Alghasab, 2025) reports that the use of artificial intelligence influences performance on writing tasks, although the effect was not long-lasting. While the use of artificial intelligence helped students to complete their assignments effectively, it did not appear to foster the development of their ability to write independently.

Recent advancement in AI technologies have introduced various tools that support language learning and teaching process in EFL context. The application of ChatGPT in education field support teachers and facilitate learners, according to (Lo et al., 2024), ChatGPT assist teacher in creating lesson plan, prepare the teaching materials and grading students' writing, in addition, it support learners in improving their understanding, communication skills, language knowledge, and fluency by providing interactive and meaningful learning experiences that make language learning more effective. Similarly, the use of AI-powered chatbots has become increasingly common in educational settings. (Klímová & Ibna Seraj, 2023) found that the use of chatbots have a positive impact on the development of learners' language skills. Their study also revealed that the use of chatbot in educational setting is effective, motivating, and satisfying for learners because these tools provide greater exposure to the target language as they are accessible anytime and anywhere. These technologies enable learners to access more flexible and interactive learning environments while assisting teachers in delivering more efficient teaching process.

Furthermore, according to (Huang & Wang, 2024), teachers' perceived enthusiasm positively predicts EFL learners' self-efficacy, but it has no significant impact on learners' well-being. The research also found that self-efficacy in the area of receptive skills mediates the relationship between teachers' AI acceptance or their enthusiasm and learners' well-being. AI offers many opportunities for EFL teachers to have more free time, less pressure, and better access to resources to support personal development, thereby enhancing teachers' passion and enthusiasm for professional growth (Sun & Sun, 2025). This research shows that artificial intelligence plays an important role and has a significant impact in the EFL context.

Several recent bibliometric studies indicate a significant increase in interest in applying Artificial Intelligence (AI) into English Language Teaching (ELT). Based on Scopus data from the 2019-2024 period, a total of 1,994 research publications were authored by more than 3,000 authors, with research activity peaking in 2023 (Hidayat et al., 2025). These findings underscore that, despite fluctuations in annual growth, research interest in AI technology remains high and continues to serve as a key pillar of innovation in language education.

Similarly, (Ardiana et al., 2025b) conclude that research on EFL writing assessment has seen significant growth over the past decade, 2014-2024, particularly through the integration of digital technologies and Artificial Intelligence into assessment practices. This trend reflects a general shift toward technology-supported assessment, in which automated tools and AI-driven systems are increasingly used to support assessment processes, provide timely feedback, and improve assessment efficiency of assessment.

In line with this trend, a bibliometric study by (Fidan, 2023) examined journals in the Web of Science (WoS) database on the use of artificial intelligence in English Language Teaching. The results highlight that artificial Intelligence has emerged as a significant and promising area of research in the EFL context, with numerous studies exploring its potential applications. However, the study also emphasize the limited number of bibliometric analyses in this field. By analyzing publications from 2013 to 2023, the research provides a comprehensive overview of existing research and offers insight into future research directions, thereby contributing to a deeper understanding of the development and potential of AI in the EFL context.

These findings are supported by research that employs bibliometric and content analysis by (Rahman et al., 2024). This research demonstrates a significant increase in AI-based language learning research, particularly between 2017 and 2023. The study reports a significant increase in publication output, accompanied by a high level of collaborative research, as evidenced by the predominance of co-authored publications. It also highlights the emergence of diverse AI tools and technologies, such as chatbots, ChatGPT, conversational agents, and automated speech recognition, which have contributed to the expansion of new research directions within the field. Furthermore, the study identifies the United States, China, and Japan as the most influential countries in this field, while keywords such as ordinary language processing and deep learning dominated the research landscape.

Consistent with (Xu et al., 2026), that highlight the rapid growth of AI applications in English writing since 2017, driven primarily by China and the United States. The study also highlights a clear shift from early research, which focused on automated writing evaluation (AWE), towards the integration of generative AI into educational practices. The study identifies key areas in AI technologies, pedagogy, and learning outcomes. In addition to mapping the development of the field, the study emphasises important implications for educational practice, including the need to rethink writing instruction, transform teaching roles, and reconsider assessment paradigms. It also suggests future research directions, including assessing long-term impacts, the promotion of AI literacy, and the consideration of global equity in English writing instruction.

Despite the growing number of studies on the integration of artificial intelligence in the EFL context, some critical issues remain. Previous research has largely focused on the effectiveness of specific AI tools, learning outcomes, and pedagogical applications; however, there remains a lack of a comprehensive and systematic overview of the evolution of this field of research over time. This limitation makes it difficult for researchers, educators, and policymakers to gain a clear and holistic picture of the research landscape, including prevailing themes, emerging trends, and key stakeholders. Furthermore, previous bibliometric studies are often limited by restricted data sources, narrow time frames, or a limited scope of analysis. This can result in an incomplete representation of recent developments in AI-supported EFL research.

Additionally, the relationship between technological, pedagogical, and psychosocial dimensions remains under-researched, particularly with regard to how these aspects are interconnected within the overarching knowledge structure of the field. Consequently, there is an urgent need for a more comprehensive and up-to-date bibliometric analysis that can provide a clearer, more integrated overview of the development and direction of research in the field of artificial intelligence in the EFL context.

Therefore, considering the rapid growth of research and the existing gaps in the literature, a comprehensive bibliometric analysis is necessary to systematically map the development, research trends, and knowledge structures of artificial intelligence in the EFL context. Such an analysis is expected to provide a clearer and more up-to-date understanding of the field by identifying dominant themes, emerging research directions, and evolving research patterns. Moreover, the findings of this study are anticipated to offer valuable insights for guiding future research, pedagogical innovation, and academic investigation in the field of AI-supported in EFL context.

The distinctive feature of this research lies in its attempt to overcome the limitations of previous bibliometric studies by offering a more comprehensive and up-to-date analysis of artificial intelligence in the EFL context. While previous studies have primarily focused on specific aspects such as publication growth or particular AI applications, with most studies emphasizing empirical implementation rather than examining publication trends and the overall development of the research field. This study takes a broader approach by incorporating current data and examining key elements such as research trends, influential authors, collaboration patterns, and thematic developments. This integrative approach enables a deeper understanding of the field's evolution and highlights emerging areas that warrant further investigation.

This research aims to address these gaps by analyzing trends in artificial intelligence research in the EFL context using a bibliometric approach. Specifically, this research systematically examines the growth and distribution of publications over time to capture the development and evolution of the field. Additionally, the most productive authors and the most influential publication sources are examined, helping to identify the key contributors and leading platforms shaping the development of research in this field. This research also examines the most frequently used keywords to identify dominant themes, emerging topics, and shifting research priorities in the literature. By integrating these analytical dimensions, this study aims to provide a clearer and more structured understanding of the intellectual landscape, research patterns, and future directions of artificial intelligence in the EFL context.

This research is expected to make several significant contributions to both theory and practice. From a theoretical perspective, it provides a comprehensive and up-to-date overview of research developments in the field of Artificial Intelligence in the EFL context, thereby enriching the existing body of knowledge and serving as a reference for future studies. From a practical perspective, the findings of this study can help research areas and potential directions for more effective integration of AI into English language instruction. Furthermore, by identifying influential authors, publication sources, and keyword patterns, this research landscape supports more informed academic decision-making.

However, this study also has some limitations. First, the analysis is limited to publications indexed in a single database, which may not fully cover all relevant studies in this field. Second, this bibliometric study focuses primarily on qualitative patterns and trends rather than providing an in-depth qualitative assessment of the content of each individual study. Consequently, the results may not fully reflect the complexity of pedagogical practices or the contextual factors influencing the use of artificial intelligence in EFL. Despite these limitations, this research offers valuable insight into the development of artificial intelligence in the EFL context.

This study is expected to provide insight into the development of artificial intelligence in the EFL context and identify potential directions for future research. The specific research question of this research is as follows:

RQ 1: What is the frequency of research on artificial intelligence in EFL in 2020-2025?

RQ 2: Which countries are the most productive in published Artificial Intelligence in EFL research?

RQ 3: Who is the most productive author and the author with the most citations on Artificial Intelligence in EFL research?

RQ 4: Which publisher publishes the most articles and is the most cited publisher on artificial intelligence in EFL research?

RQ 5: What keywords are most widely used in the artificial intelligence in EFL research?

METHOD

The research methodology used in this study is a quantitative method as it analyzes numerical data obtained from scientific publications. This approach aligns with bibliometric analysis, which is widely used to offer a systematic and quantitative evaluation of written

publications. According to Ellegaard and Wallin (2015), bibliometrics have been used to conduct quantitative analysis of written publications. Through this approach, numerical data such as publication trends, citation patterns, and keyword occurrence can be analyzed to reveal the development of research within a specific field.

Data Source

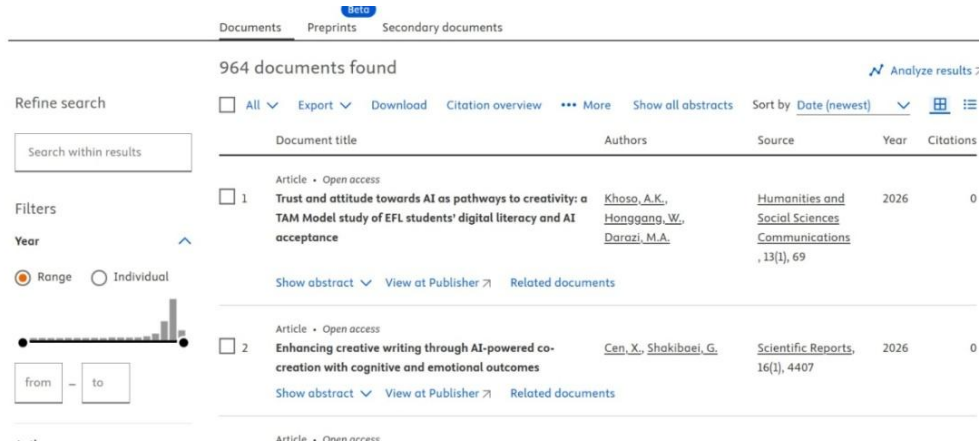


Figure 1. Search in the Scopus Database

Scopus was selected because it provides high-quality international peer-reviewed publications. Scopus is widely recognized for its extensive database of peer-reviewed literature, including journals, conference proceedings, and books across various disciplines. This broad coverage enables researchers to obtain a large and diverse dataset, which is essential for conducting a robust bibliometric analysis. The publications included in this research were limited to those published between 2020 and 2025, with “Artificial Intelligence” and “EFL” as the main keywords.

Search Strategy

“Artificial intelligence” and “EFL” was using as a keyword in this search for research result in the scopus database to conduct the data which resulted 964 data related to the keywords. A publication year was filter was applied to included only articles published between 2020-2025, which is considered the most relevant periode. As a result, 120 data outside this time range were excluded, leaving 844 records for further screening. A subject area filter was applied to focus on studies within the Social Science subject area. This was ensured that the selected data were relevant to educational and language learning contexts. As a result, 164 data from other subject areas were excluded, drive the dataset to 680 data. Additionally, a document type filter was applied to included only article and review, which are consider more relieable publishers for academic research. Other document type such as conferences, books, book chapters, editorials, erratum, letters, and notes were excluded. This stage removed 63 data, resulting in 617 data remaining. The last, language filter was applied to include only data written in English to ensured consistency in the analysis and interpretation of the literature. One non-English document was excluded, resulting total of 616 data that can be used for bibliometrics analysis.

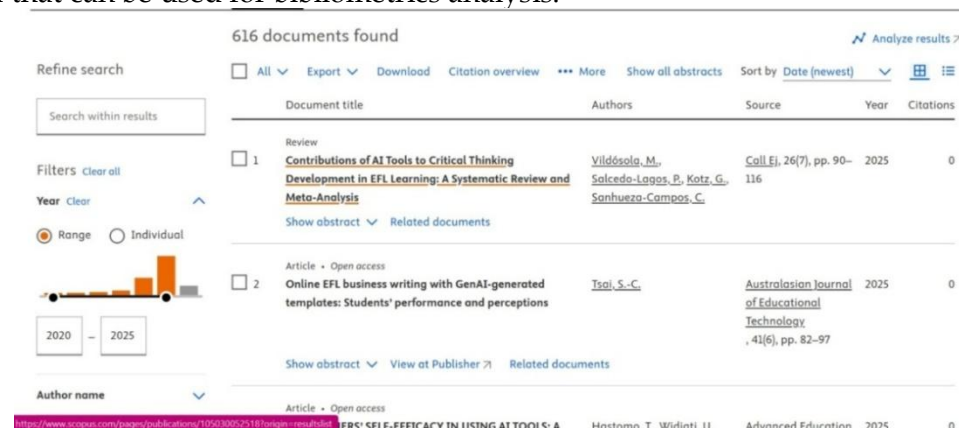


Figure 2. Final search result from Scopus

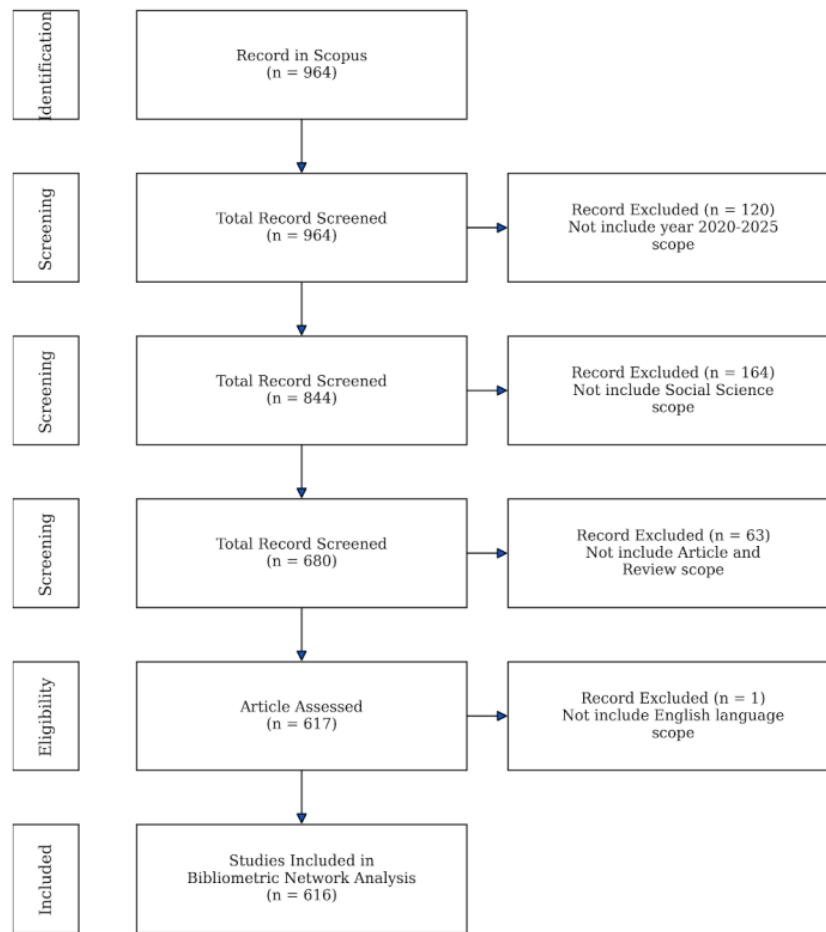
Data Collection Technique

Figure 3. Prisma flow for sample identification created by Google Gemini AI

The data collection process in this research followed the PRISMA framework to ensure a transparent and systematic filtering procedure. PRISMA is a useful tool for planning and conducting systematic reviews to ensure that all recommended information is reported (Page et. al., 2021).

As presented in Figure 2, “Artificial intelligence” and “EFL” were used as keywords in the Scopus database search to obtain data. The search string applied in the database was (“Artificial Intelligence” AND “EFL”). The initial search yielded 964 results related to the keywords. A publication year filter was applied to include only articles published between 2020 and 2025, which was considered the most relevant period for this study. As a result, 120 data points outside this time range were excluded, leaving 844 records for further screening. A subject-area filter was applied to focus on studies in the Social Science subject area. This ensured that the selected data were relevant to educational and language learning contexts. As a result, 164 data points from other subject areas were excluded, reducing the dataset to 680 data points.

After that, a document type filter was applied to include only articles and reviews, which are considered more reliable sources for academic research. Other document types, such as conferences, books, book chapters, editorials, errata, letters, and notes, were excluded. This stage removed 63 data points, resulting in 617 data points remaining. The final language filter include only publications written in English to ensure consistency in the analysis and interpretation of the literature. One non-English document was excluded, resulting in a final dataset of 616 document that can be used for bibliometrics analysis.

Figure 4. CSV layout Format in Microsoft Excel View.

In addition, specific threshold were applied to ensure the reliability of the analysis, the results were then presenting using network visualization and overlay visualization to illustrate the structure, trends, and development of research on artificial intelligence in EFL context. Through these procedures, the study systematically identifies, publication trends, most productive author, influential publisher and most widely keyword, providing a complete overview of the research landscape.

The frequency of Artificial Intelligence in EFL research, based on the Scopus database from 2020 to 2025. The group publications are sorted by publication year. Based on Scopus analysis, a graph emerged showing the increase in the number of publications each year. During this period, 2025 had the highest number of publications, with 412. While 2020 became the year with the lowest number of publications, with 2 publications, this year also marked the beginning of research on artificial intelligence in the EFL context. The large gap of 410 documents highlights the growing progress of research on artificial intelligence in the EFL context. This indicated growing interest among researchers in research on artificial intelligence in the EFL context and suggests that artificial intelligence has become an increasingly important area in the EFL context. The analysis of 616 documents extracted from the Scopus database has show a significant increase in the number of studies related to Artificial intelligence in the EFL context over the past 5 years. These findings align with a previous study that indicated an acceleration in the integration of artificial intelligence in educational practice, particularly in language contexts (Hidayat et al., 2025).

The Most Productive Countries Contributing to Artificial Intelligence in EFL Research

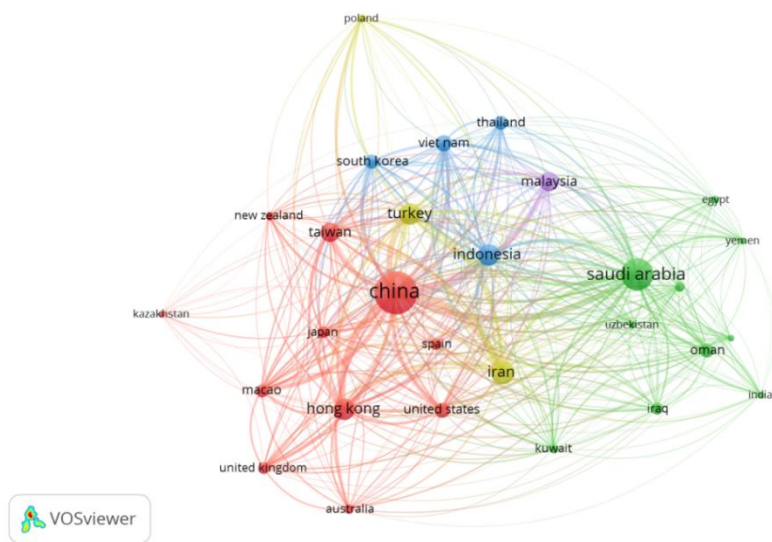


Figure 6. Most productive countries.
Table 1. Most productive countries.

Country	Document	Citation	Total Link Strenght
China	171	3811	93
Saudi Arabia	97	768	28
Iran	51	1525	21
Turkey	44	206	18
Indonesia	44	869	16
Hongkong	42	1423	40
Taiwan	35	1093	16
Malaysia	34	197	30

The analysis of the most productive countries was carried out by creating a map in VOSviewer using data extracted from the Scopus database, including bibliographic coupling and unit analysis of countries. The minimum document of a country is set at 5, and the citation of a country is set at 0. Of 63 countries, only 29 met the thresholds. This analysis shows that China placed the first rank as the most productive country, with 171 documents, this indicates that China made a significant contribution to the development of research on artificial intelligence in EFL. This dominance may be attributed to the China’s strong focus on technological innovation and its increasing emphasis on integrating AI into educational practices. The rapid advancement of digital infrastructure and the widespread adoption of AI-based educational tools in China have provided greater opportunities for conducting research and developing innovative approaches in EFL context. Saudi Arabia occupied the second position with 97 documents, followed by Iran with 51 documents, Turkey and Indonesia with 44 documents, Hong Kong with 42 documents, Taiwan with 35 documents,

and Malaysia with 34 documents. These findings align with previous reports that China continues to emerge as a central figure and a highly productive country in these fields (Ardiana et al., 2025). Moreover, the large volume of publications produced by Chinese researchers demonstrates their active involvement in exploring the potential of Artificial intelligence to enhance language learning, teaching methods, and educational outcomes in EFL settings.

The Most Productive Author and The Author With The Most Citations on Artificial Intelligence in EFL Research

Table 2. The most productive author.

Author	Document	Citation	Total Link Strenght
Guo, Kai	13	498	325
Zou, Bin	8	353	85
Derakhshan, Ali	8	813	250
Wang, Yongliang	6	608	190
Hastomo, Tommy	5	32	133

Table 3. The most cited author.

Author	Citation	Title
Wang, Y. (2024)	1225	Modelling Generative AI Acceptance, Percieved Teachers' Enthusiasm and Self-Efficacy to English as a Foreign Language Learners' Well-being in the Digital Era
Derakhshan, A. (2024)	813	Improving EFL learners' speaking skills and willingness to communicate via artificial intelligene-mediated interactions.
Perkins, M. (2023)	557	Academic Integrity considerations of AI Large Language Models in the post-pandemic era: ChatGPT and beyond.
Rusdin, D. (2023)	539	The impact of AI writing tools on the content and organization of students' writing: EFL teachers' perspective.
Jeon, J. (2024)	507	Exploring AI chatbot affordances in the EFL classroom: young learners' experiences and perspectives.

The analysis of the most cited authors and most productive authors from 2020 to 2025 in the context of Artificial Intelligence in EFL was extracted from the Scopus database. The data analysis was manually carried out by examining the AOA (Attribute of Analysis) provided in VOSviewer. Based on the data presented in Table 2, it is indicated that only a limited number of authors have demonstrated high productivity by publishing multiple documents on the topic. Guo, Kai, is found as the most productive author, contributing 13 publications, followed by Derakhshan, Ali, and Zou, Bin, each with 8 publications, as well as Wang, Yongliang, with 6 publications, and Hastomo, Tommy, with 5 publications.

As presented in Table 3, Wang, Y. received the highest number of citations, with a total of 1,225 citations, for the study entitled "Modeling Generative AI Acceptance, Perceived Teachers' Enthusiasm and Self-Efficacy to English as a Foreign Language Learners' Well-being in the Digital Era". Derakhshan, A., followed as the second most cited author with 813 citations, highlighting the importance of research on AI-assisted language learning, particularly in improving learners' speaking skills trough study entitled "Improving EFL learners' speaking skills and willingness to communicate via artificial intelligence-mediated interactions." Furthermore, Perkins, M. obtained 557 citations through the study "Academic Integrity considerations of AI Large Language Models in the post-pandemic era: ChatGPT and beyond.", emphasizing the importance of ethical concerns in AI use. Rusdin, D. follows with 539 citations for the research entitled "The impact of AI writing tools on the content and organization of students' writing: EFL teachers' perspective.". In addition, Jeon, J. gained 507 citations for the study exploring AI chatbot affordances in EFL classrooms, particularly focusing on young learners' experiences.

In terms of individual contributions, this distinction highlights the difference between research productivity and research impact. Guo, Kai contributes to the highest volume of publications, whereas Wang, Y's demonstrated a stonger influence within the academic community trough citation impact. Their publication have a significant role in shaping the direction and development of research on artificial intelligence in the EFL context. These findings contrast with those reported by Fidan and Kasimi (2023), who

utilized the Web of Science (WoS) database to examine artificial intelligence research in the EFL context. Fidan and Kasimi reported a total of 177 publications, with Huang, C.R., as the most productive author, contributing seven papers. These differences may be influenced by variation in database selection, search strategies, and indexing systems between WoS and Scopus

The Most Productive and The Most Cited Publisher on Artificial Intelligence in EFL Research

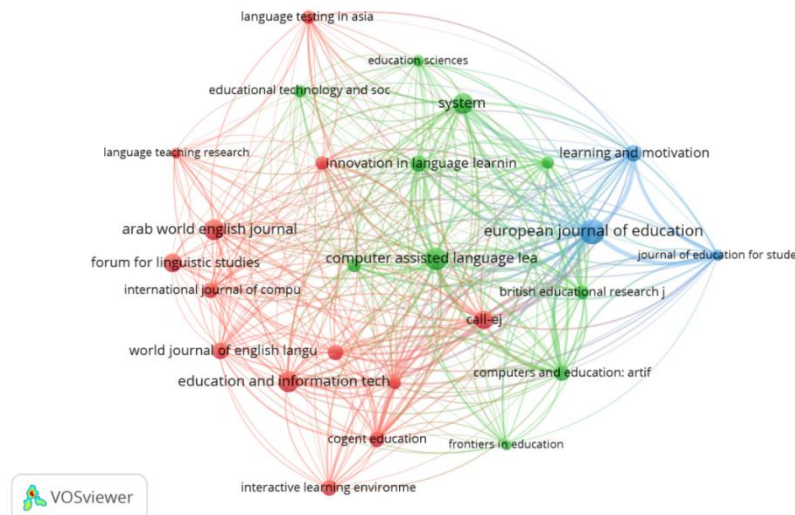


Figure 7. Most cited publisher and most productive publisher.

Table 4. Most cited publisher and most productive publisher.

Publisher	Document	Citation	Total Link Strenght
European Journal of Education	32	1096	964
Computer Assisted Language Learning	27	1035	715
Education and Information Technologies	22	803	396
System	22	1000	509
Arab World English Journal	22	222	207

Bibliographic coupling analysis of the publisher was carried out to explore the intellectual structure of the research field by identifying relationships among journals based on shared references. The analysis was performed using VOSviewer with the type of analysis set to bibliographic coupling, the unit of analysis was publisher, the minimum number of documents per publisher was set to 6, and the minimum number of citations was set to 0. Out of a total of 175 publishers identified in the dataset, 26 publishers met the established threshold and were included in Figure 5. The data analysis was manually sorted by examining the AOA (Attribute of Analysis) provided in VOSviewer.

The analysis further identifies several influential publishers that actively publish studies related to artificial intelligence in the EFL context. This research found that European Journal of Education emerges as the most productive and influential publisher in the past five years, with 32 documents, 1,096 citations, and 964 total link strength. The significance of this publication suggests that the journal serves as a key platform for research communication in this area. It was followed by Computer Assisted Language Learning with 27 documents and 1,035 citations, as followed by System and Education and Information Technologies, each contributes 22 documents, with System showing higher citation with 1000 citations compared to Education and Information Technologies, which has 803 citations. Followed by the Arab World English Journal in the fifth rank, with 22 documents contributed.

In contrast with Rahman et.al, (2024), the findings show a different influential publisher. They identified Computer-assisted language learning as the most influential source with 13 documents and 166 citations. Identifying these publishers is beneficial for researchers who intend to publish or seek relevant literature within this research field.

The Most Widely Used Keywords in The Artificial Intelligence in EFL Research

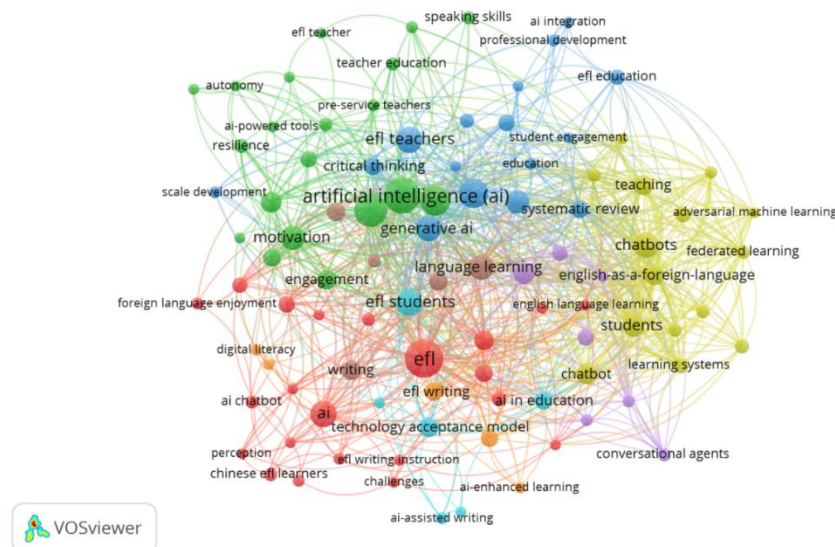
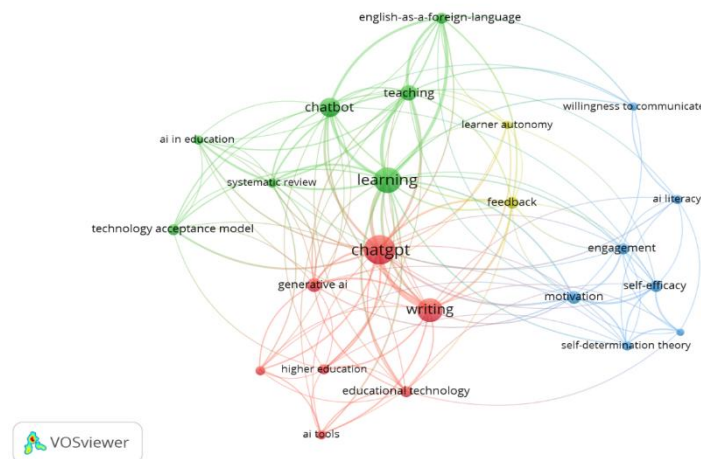


Fig. 8. Most used keyword after thesaurus.



The analysis of the most widely used keywords in this research was conducted by creating a map based on CSV data extracted from the Scopus database. The analysis was performed using VOSviewer to identify the relationships among keywords through co-occurrence analysis. In the first stage, the selected analysis type was co-occurrence, with the unit of analysis set to all keywords. The applied counting method was full counting, with a minimum keyword occurrence of 5. Out of 1781 keywords identified in the data, 48 thresholds were included in the initial mapping. To improve the clarity of the visualization, general and overly broad keywords such as “artificial intelligence” and “EFL” were removed, as they were considered too generic and could dominate the network without providing specific insights.

Subsequently, the exported data were processed using ChatGPT to generate a thesaurus file. This process aimed to merge synonymous terms, standardize variations in keyword expressions, and eliminate redundant terms. The refined dataset, along with the thesaurus file, was then re-imported into VOSviewer for further analysis. The final stage, the co-occurrence analysis, was repeated using a higher minimum occurrence threshold of 8 to obtain a more focused network. From a total of 1737 keywords, 25 keywords met the threshold and were included in the final visualization. Similar to the previous step, general

keywords such as “artificial intelligence” and “EFL” were excluded to enhance the specificity of the results.

The visualization results are presented in Figure 7. The co-occurrence analysis was directed to identify the main research themes and relationships among keywords related to the use of artificial intelligence in the EFL context. The visualization illustrates how frequently keywords appear together and how they form thematic clusters representing different research focuses. As presented in Figure 7, several clusters can be identified, each representing a specific research theme within the field.

The red cluster focuses on generative technology and institutional contexts. It's dominated by keywords such as ChatGPT, writing, and generative AI, highlighting the practical application of AI tools in higher education, particularly in supporting academic writing and the use of educational technology. The green cluster emphasizes pedagogical aspects and learning processes, with central keywords including learning, teaching, and chatbot. This cluster explores instructional methodologies such as systematic review, learner autonomy, and the integration of technology in English as a Foreign Language teaching, including the application of the Technology Acceptance Model (TAM). Meanwhile, the blue cluster represents psychosocial and motivational dimensions. It connects keywords such as motivation, engagement, and self-efficacy, and is closely associated with theoretical frameworks such as self-determination theory, AI literacy, and willingness to communicate.

The results also reveal several of the most frequently used keywords, with ChatGPT ($f=111$) as the most dominant term. Other widely used keywords include learning ($f=86$), writing ($f=72$), chatbot ($f=46$), and teaching ($f=31$). These keywords are represented by a large node size in the network visualization, indicating their high frequency and strong relationship with other terms.

The dominance of writing keywords indicates that writing has become one of the primary language skills explored in artificial intelligence in EFL research. This trend may be influenced by the complexity of writing as a productive skill, which requires learners to develop grammar, vocabulary, organization, coherence, and critical thinking simultaneously. As a result, researchers and educators increasingly utilized AI to support writing instruction, provide automated feedback, and enhance students' writing performance. Furthermore, the strong prominence of ChatGPT reflects the growing attention toward generative AI in language education. ChatGPT has gained significant interest due to its ability to generate instant responses, facilitate interactive communication, assist with idea development, and provide personalized feedback for learners. Its accessibility and versatility have made it one of the most widely explored AI tools in EFL contexts, particularly for supporting writing activities, learner engagement, and autonomous learning practices.

These findings are largely consistent with those reported by (Xu et al., 2026), who also identified ChatGPT, artificial intelligence, and automated writing evaluation as the most dominant keywords, followed by writing-related terms such as L2 writing, English writing, EFL writing, and EFL. Xu et al., separated four clusters and an additional cluster, the first cluster highlights the use of ChatGPT and AI tools as a writing instruction, the second cluster emphasizes the technical foundation of AI in language learning, the third cluster focuses on learner engagement and feedback in L2 writing, the fourth cluster reflects the use of AI, such as chatbots, for providing feedback, while the additional cluster represents more specific application, such as automated writing evaluation and support for EFL students' writing skills.

In conclusion, this research demonstrated a significant and continuous growth in research on Artificial Intelligence in the EFL context from 2020-2025, reflecting its transformation from an emerging topic into a major area of research focus in language education. The sharp rise in publication frequency indicates growing academic interest and underscores the important role of AI in enhancing teaching practices, supporting learning processes, and improving students' outcomes. The findings also reveal that the research contributions are globally distributed, with China leading as the most productive country, followed by other active contributors' country, suggesting that advancements in Artificial

intelligence related to EFL research are closely linked to technological development and educational priorities across regions,

In terms of authorship, a clear distinction emerges between research productivity and research impact, where some authors contribute high volume of publications while others greater influence through widely cited work, both of which shape the development of the field. Additionally, leading publishers serve as key platforms for disseminating influential studies. The keyword analysis further demonstrates that current research is largely focused on emerging technologies such as ChatGPT, writing tools, and chatbots, as well as their pedagogical and psychological implications, indicating an increasingly interdisciplinary trend. Overall, these findings confirm that Artificial intelligence has become a rapidly growing and important domain in EFL research, with strong potential to shape future educational practice.

CONCLUSIONS

The findings of this study demonstrate a significant increase in publications related to artificial intelligence in the EFL context between 2020 and 2025, indicating growing academic interest in the integration of artificial intelligence into language learning and teaching. The analysis also identified China as the most productive contributing country, while Wang, Y. emerged as the most influential author based on the citation impact. In addition, the European Journal of Education was recognized as one of the leading publication sources in this research field. Furthermore, the keyword co-occurrence analysis revealed that current research trends are primarily focused on writing-related applications, pedagogical, integration and emerging artificial intelligence. Keyword such as ChatGPT, writing, and chatbot appeared as the most dominant and frequent used terms, reflecting the increasing attention toward generative AI and AI-assisted language learning in EFL contexts. These findings provide valuable insights for researchers, educators, and practitioners by offering a comprehensive overview of the development and direction of artificial intelligence research in the EFL field. Overall, this study contributes to the existing literature by highlighting major research trends, influential contributors, and emerging themes that may guide future research and educational practices related to AI-supported language learning.

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